REMARKS

The Office Action dated May 14, 2008, has been received and carefully noted. The above amendments and the following remarks are submitted as a full and complete response thereto.

Claims 1-19 were pending in this Application. By this Amendment, claims 1, 6, 12, 13, and 16 have been amended, and new claims 20 has been added. Support of these amendments can be found in the specification and drawings originally filed. More particularly, amendments to Claim 13 have support in the specification and at least in Fig. 4. No new matter has been added. Therefore, after entry of this Amendment, Claims 1-20 will be currently pending.

35 U.S.C. §112, first paragraph, rejection

The Office Action rejected claims 1-15 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Office Action asserted that these claims contain subject matter which was not described in the specification. In particular, the Office Action alleged that the specification does not indicate that the claimed photographic device includes *a data array former*, *a photographic pixel data array former*, *an extractor*, or *a producer*, as recited in claims 1 and 12. Moreover, the Office Action alleged that there is no mention of *an extractor* or *a producer* anywhere in the specification.

In response, Applicants respectfully pointed out that there is clear support for the *data array former* and the *photographic pixel data array former* in the specification in the form of "data array forming means" and "photographic pixel data array forming means," respectively, (e.g., original Claim 2; page 3, lines 1-8; page 7, lines 10-18). As to the

support for the *extractor* and *producer*, Claim 16 recites the functions associated with the *extractor* and *producer*, yet the Office Action did not reject Claim 16 under §112, first paragraph. To overcome the 35 U.S.C. 112, second paragraph, rejection, however, Claims 1, 12, and 13 have been amended to remove the *extractor* and *producer* features. Such amendments overcome the rejection of Claims 1-15 under 35 U.S.C. 112, first paragraph.

35 U.S.C. §101 rejection

In the Office Action, Claims 16-19 were rejected under 35 U.S.C. §101. Regarding the §101 rejection of claims 16-19, the Office Action asserted that these claims are directed towards non-statutory subject matter. In particular, the Office Action alleged that the claims produce no tangible result.

It is noted that Claim 16 has been amended to additionally recite a step "(f) executing information processing according to the obtained card ID. Such an amendment imbues claim 16 and its dependent claims 17-19 with a tangible result and, as such, overcomes the §101 rejection.

35 U.S.C. §§102(b) and (e) rejection

Claims 1-3, 5-10, and 13-15 were rejected under 35 U.S.C. §102(e) as being anticipated by Kaji (U.S. Patent Application Publication No. 2003/0171142), Claim 12 was rejected under 35 U.S.C. §102(e) as being anticipated by Ishihara (U.S. Patent Application Publication No. 2002/0028710), and Claims 16, 17, and 19 were rejected under 35 U.S.C. §102(b) as being anticipated by Shimura (U.S. Patent No. 5,644,765).

In response to previously submitted arguments asserting that neither Kaji nor Ishihara disclose an entertainment apparatus including a card printed with a visually

human-identifiable design, and a photographic device for photographing the design of

the card and fetching a photographic pixel data array, as recited in Claims 1 and 12, the

Office Action, at page 7, alleged that "for photographing said design" is not given

patentable weight because the claim draws towards an apparatus claim wherein such

language is interpreted as "intended use language" that does not differentiate the

claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Regarding the §102(b) rejection of Claim 16, the Office Action merely maintained the

rejection as stated in the previous Office Action dated August 8, 2007.

It is noted that Claims 1, 12, 13, and 16 have amended. To the extent that the

rejections are still applicable to the currently pending claims, they are respectfully

traversed.

Claim 1, as amended, recites an entertainment apparatus using cards,

comprising <u>a card photographing part for setting said card in a predetermined position,</u>

a photographic device <u>that is configured to photograph</u> said design of said card <u>that is</u>

<u>set at said predetermined position in said card photographing part</u> and <u>to fetch</u> a

photographic pixel data array, a database including a plurality of entries individually

corresponding to said plurality of cards, each of the entries including a pair of a card ID

and a comparison data array, a card identifier for searching said database for a specific

comparison data array based on said photographic pixel data array and obtaining a card

ID pairing up with the specific comparison data array, and an information processor for

performing said information processing with said card ID obtained by said card identifier

as an input, wherein the photographic device includes an image sensor for

photographing the design and outputting a photographic signal, a data array former for

sampling the photographic signal and forming a data array, and a photographic pixel data array former for re-sampling the data array and forming the photographic pixel data array <u>and forming said photographic pixel data array</u>, wherein the data array formed by the data array former is constituted by a plurality of pixel data, <u>wherein the photographic pixel data array formed by the photographic pixel data array former is constituted by a plurality o photographic pixel data, and </u>wherein the photographic pixel data array former sequentially extracts a predetermined number of pixel data of pixels adjacent to each other in an image represented by the photographic signal from the plurality of pixel data constituting the data array while the extracted pixel data are changed sequentially, and produces said single photographic pixel data based upon the extracted predetermined number of pixel data every time the predetermined number of pixel data is extracted.

Similar features, such as "card photographing part," "photographic pixel data array," and "executing information procession" features as recited in amended Claim 1 are also included in amended Claims 12, 13, and 16.

As recited in the claims, an image sensor photographs a card design and outputs a photographic signal, a data array former samples the photographic signal and forms a data array, and a photographic pixel data array formers re-samples the data array and forms a photographic pixel data array. Further, the photographic pixel data array formed by the photographic pixel data array former is constituted by a plurality of photographic pixel data. The photographic pixel data array former sequentially extracts a predetermined number of pixel data of pixels adjacent to each other in an image represented by the photographic signal from the plurality of pixel data constituting the data array while the extracted pixel data are changed sequentially, and produces a

single photographic pixel data based upon the extracted predetermined number of pixel data every time the predetermined number of pixel data is extracted. That is, the pixel data are extracted with a unit of a predetermined number from the photographic signal output by the image sensor (sampling), and a single photographic pixel data is produced from the predetermined number of the pixel data (re-sampling).

For convenience of explanation, the predetermined number of the pixel data is called as a pixel block. Therefore, one photographic pixel data can be produced from one pixel block. Since the photographic signal is constituted by a plurality of pixel blocks, one photographic pixel data is produced for each pixel block. Then, by comparing the photographic pixel data thus produced and the database, the card can be identified.

That is, the present invention does not compare respective raw pixel data of the photographed image and respective pixel data of the image stored in the database as done conventionally, but compares the photographic pixel data obtained through the re-sampling. Therefore, it is possible to absorb or compensate errors due to the positional deviation of the card.

Presumably but not admitted, the prior art also compares the respective raw pixel data of the photographic signal and the database. In such a case, the comparative image having the same resolution of the photographed image is stored in advance. Therefore, if the card is settled within the photographed image in the defined manner and if the card image is originally coincident with the comparative image, between the photographed image and the comparative image, respective pixels that the positions (coordinates) thereof are corresponding to each other become coincident with each

other. For example, at a time that the pixels of 5 rows x 5 columns in the comparative image and the pixels of 5 rows x 5 columns in the photographed image are compared with each other, if the card is originally coincident with the comparative image, the both coincide. However, in a case that the card is not settled within the photographed image in the defined manner, i.e., the deviation occurs in the card position, even if the card is originally coincident with the comparative image, when the pixels of 5 x 5 in the comparative image and the pixels of 5 x 5 in the photographed image are compared with each other, respective pixels that the positions (coordinates) thereof are corresponding to each other become not coincident with each other, and thus, the card is determined being not coincident.

However, in the present invention, instead of comparing the pixel data one pixel by one pixel between the photographed image and the database image, the present invention compares the photographic pixel data produced from the pixel block with the database, even thought the card is not settled within the photographed image in the defined manner. Therefore, it is possible to prevent the card that is to be originally coincident with the database from being determined not coincident. That is, the pixel block includes a predetermined number of the adjacent pixels so that the single photographic pixel data produced form the pixel block can be reflected by the values of the predetermined number of pixels. Thus, it is possible to absorb a bit of the positional deviation.

In addition to the above-described advantage, in the present invention, since the single photographic pixel data from the pixel block including the predetermined number of pixels is an object to be compared with the database, the number of the objects to be

compared to the database is reduced, thereby reducing the burden for processing and the size of the database and achieving a high-speed processing.

Among the prior art cited by the Examiner, Kali fails to teach or suggest the elements/limitations of amended Claims 1, 12, and 16.

In Kaji, the player sets the card 20 at an arbitrary position in the panel 24 (see Figure 4) in which a plurality of cards are arranged. Then, in the step S15 in Figure 10, rough and provisional position and angle of the card are evaluated from the image having the resolution made half. In this case, the object to be detected is the card data 20 (Figure 9) existing on the rear surface of the card. In detecting the card data, a sobel filter is used to derive the edge or outline in the longitudinal and lateral directions. Such a filter is entirely different from the re-sampling recited in the claims. After extracting the edge or outline, it performs a pattern matching process to evaluate the rough position and angle of the card data. It further executes a thinning process to delete unnecessary coordinates.

Next, in the step S16 of Figure 10, the image (card data 20) neighboring the coordinates having been roughly evaluated in the step S15 is cut-out form the image before reducing the resolution thereof, and the edge or outline of the cut-out image is derived and the pattern matching process is performed to exactly evaluate the position and angle of the card.

Clearly, Kaji is different from the present invention from the foregoing descriptions. First, in the present invention, the card is to be set at a predetermined position in the photographing part, not at an arbitrary position. That is, the present invention premises the card is set in the defined manner. Therefore, if a deviation

occurs in the card's position, it is necessary to absorb or compensates the deviation.

On the contrary, in Kaji, the player can arrange the cards at any positions in the panel,

so that the apparatus and method of Kaji need perform the above-described cut-out

processing and detect the position and angle of the card data. Therefore, Kaji fails to

teach or suggest that the single photographic pixel data is produced form the

predetermined number of pixels being adjacent, as recited in amended Claims 1 and

similarly in amended Claims 12 and 16.

Second, in Kaji, the card data 20 of the binary values is identified through the

pattern matching. In contrast, in the present invention, the card is identified through the

pattern matching of the figure design. As described in the originally-filed English

specification, the present invention provides an entertainment apparatus using cards

that can identify a card and obtain an input based on the identification result, even

though such a card contains no identification code, for example, the card data 20 in

Kaji.

In view of the above, Kaji fails to teach or suggest at least the combination of

features: "a card photographing part for setting said card in a predetermined position,"

"a photographic device that is configured to photograph said design of said card that is

set at said predetermined position in said card photographing part and to fetch a

photographic pixel data array," "the photographic device includes . . . . a data array

former for sampling the photographic signal and forming a data array, and a

photographic pixel data array former for re-sampling the data array and forming the

photographic pixel data array and forming said photographic pixel data array," and "the

photographic pixel data array former sequentially extracts a predetermined number of

pixel data of pixels adjacent to each other in an image represented by the photographic signal from the plurality of pixel data constituting the data array while the extracted pixel data are changed sequentially, and produces said single photographic pixel data based upon the extracted predetermined number of pixel data every time the predetermined number of pixel data is extracted," as recited in amended Claim 1.

Therefore, amended Claim 1 is anticipated by Kaji and is allowable over the cited art at least based on the reasons stated above. As Claim 1 is allowable, Claims 2-3 and 5-10, and 13-15 that depend from amended Claims 1 are likewise allowable at least due to their dependencies from allowable independent claim.

Regarding to the rejection of Claim 12, Applicants respectfully submit that Ishihara mechanically reads the data if the information recording area 34 (0041) that is constituted by the barcode, IC card and etc. Therefore, it is unnecessary for Ishihara to perform any pattern matching process.

Accordingly, it is respectfully submitted that amended Claim 12 is not anticipated by Ishihara and is allowable over the cited art.

Regarding the rejection of Claims 16, 17, and 19, it is noted that in Shimura, the feature amount is derived from an example image 20 (see Figure 2), and the pattern matching is performed by comparing the derived feature amount and the feature amount stored in the database 33 (see Figure 5). Shimura only describes that the feature amount is indicative of the feature of the image (line 30-32, column 3), but fails to teach or suggest steps of "(d1) sequentially extracting a predetermined number of pixel data of pixels adjacent to each other in an image represented by the photographic signal from the plurality of pixel data constituting the data array while the extracted pixel

data are changed sequentially," " (d2)producing said single photographic pixel data based upon the predetermined number of pixel data extracted by the step (d) every time said step (d1) is executed," and "(f) executing information processing according to the obtained card ID," as recited in amended Claim 16.

Therefore, amended Claim 16 is not anticipated by Shimura and is allowable over the cited art at least based on the reasons stated above. As Claim16 is allowable, Claims 17 and 19 that depend from amended Claim 16 are likewise allowable at least due to their dependencies from allowable independent claim.

35 U.S.C. §103(a) rejection

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Kaji in view of Ishihara, Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Kaji in view of Shibuya (U.S. Patent No. 7,006,693), and Claim 18 was rejected under 35 U.S.C. §103(a) as being unpatentable over Shimura.

It is noted that Ishihara, Shibuya, and Shimura fail to cure the deficiency of Kaji. Moreover, as Claims 4, 11, and 18 depend on allowable independent claims, they are allowable over the cited art.

Newly added claim

New Claim 20 is directed to a storage medium that is readable by a processor of a card identifying apparatus and stores an identifying program by which a plurality of cards on each of which a visually human-identifiable design is printed can be designed. As Claim 20 contains similar features of amended Claim 1, based on the reasons stated above with respect to Claim 1, Claim 20 is also allowable over the cited art.

CONCLUSION

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number set forth below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, referencing Attorney Dkt. No. 100341-00062.

Respectfully submitted,

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